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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/775,514	02/05/2001	Toshihiro Tsumura	49657-983	8460

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Washington, DC 20005-3096

EXAMINER

PHAN, HANH

ART UNIT PAPER NUMBER

2633

DATE MAILED: 02/25/2004

5

Please find below and/or attached an Office communication concerning this application or proceeding.

SAH

## Office Action Summary

Application No.

09/775,514

Applicant(s)

TSUMURA, TOSHIHIRO

Examiner

Hanh Phan

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2633

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 05 February 2001.  
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.  
6) ☒ Claim(s) 1-19 is/are rejected.  
7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.  
10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All b) ☐ Some \* c) ☐ None of:  
1. ☒ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)  
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 2.  
4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.  
5) ☐ Notice of Informal Patent Application (PTO-152)  
6) ☐ Other: \_\_\_\_\_.

**DETAILED ACTION**

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1, 5-7 and 16-19 are rejected under 35 U.S.C. 102(b) as being anticipated by Tsumura (US Patent No. 5,117,301).

Regarding claim 1, referring to Figures 7 and 9, Tsumura discloses a multi-channel optical communication system comprising:

an optical transmitting apparatus (i.e., transmitting device 20, Fig. 7) including a retroreflector (i.e., light beam reflecting device 88, Fig. 7) reflecting incident light in the direction of a source of the incident light and

a modulator (Fig. 9) for modulating the light reflected by the retroreflector according to a transmission signal; and

an optical receiving apparatus (i.e., receiving device 22, Fig. 7) including a light emitter (i.e., light beam emitting device 90, Fig. 7) emitting light and a demodulator (i.e., demodulating circuit 36, Fig. 7) for demodulating from the light

emitted from the light emitter and reflected from the retroreflector the transmission signal modulated by the modulator,

a plurality of reflection condition control devices (Fig. 9) arranged on a reflection plane of the retroreflector and capable of controlling optical reflection independently of each other and a driver for separately controlling each of the reflection condition control devices according to the transmission signal, and

the demodulator including

a photoreceiver (i.e., light receiving portion 28, Fig. 7) having a plurality of photoreceptors arranged correspondingly to arrangement of the plurality of reflection condition control devices for receiving the reflected light and

a signal demodulating circuit (36)(Fig. 7) reconstructing the transmission signal from respective outputs of the plurality of photoreceptors (see from col. 7, line 53 to col. 10, line 62).

Regarding claims 5, 16 and 17, Tsumura further teaches each of the reflection condition control devices includes an optical drive element provided to face a total reflection plane of the retroreflector from the direction opposite to the direction of a source of light incident on the total reflection plane of the retroreflector and changing its shape, in response to radiation of light with a specific wavelength, between a first shape closely fit onto the total reflection plane and a second shape forming a gap between itself and the total reflection plane, reflection from the total reflection plane being controlled by radiation of the light having the specific wavelength to the optical drive element (Fig. 9, from col. 7, line 53 to col. 10, line 62).

Regarding claims 6 and 7, referring to figures 7 and 9, Tsumura teaches an optical transmitting apparatus for a multi-channel optical communication system comprising:

- a retroreflector (i.e., light beam reflecting device 88, Fig. 7) reflecting incident light in the direction of a source of the incident light; and

- a modulator (Fig. 9) for modulating the light reflected by the retroreflector according to a transmission signal,

- the modulator including

- a plurality of reflection condition control devices arranged on a reflection plane of the retroreflector and capable of controlling optical reflection independently of each other and

- a driver (110)(Fig. 9) for separately controlling each of the reflection condition control devices according to the transmission signal (see from col. 7, line 53 to col. 10, line 62).

Regarding claims 18 and 19, referring to figures 7 and 9, Tsumura teach an optical receiving apparatus for a multi-channel optical communication system comprising:

- a photoreceiver (i.e., light receiving portion 28, Fig. 7) receiving a bundle of lights containing a plurality of light beams modulated respectively by separate signals and having a plurality of photoreceptors arranged correspondingly to an arrangement of the plurality of light beams; and

a demodulator (i.e., demodulating circuit 36, Fig. 7) for demodulating from respective outputs of plurality of photoreceptors a signal transmitted by each of the plurality of light beams (see from col. 7, line 53 to col. 10, line 62).

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 2-4 and 8-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tsumura (US Patent No. 5,117,301) in view of Fan et al (US Patent No. 6,449,406).

Regarding claims 2-4 and 8-15, Tsumura discloses all the aspects of the claimed invention except fails to teach each of the reflection condition control devices includes a digital micro-actuator provided on the rear side of a transparent plate constituting the reflection plane of the retro-reflector and having a control plane according to an applied signal to change its direction, the direction of the control plane being changed to control reflection from the rear side of the transparent plate. However, Fan teaches each of the reflection condition control devices includes a digital micro-actuator provided on the rear side of a transparent plate constituting the reflection plane of the retro-reflector and having a control plane according to an applied signal to change its direction, the direction of the control plane being changed to control reflection from the rear side of

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the transparent plate (Figs. 6A-6C, col. 9, lines 3-32). Therefore, it would have been obvious to one having skill in the art at the time the invention was made to incorporate the each of the reflection condition control devices includes a digital micro-actuator provided on the rear side of a transparent plate constituting the reflection plane of the retro-reflector and having a control plane according to an applied signal to change its direction, the direction of the control plane being changed to control reflection from the rear side of the transparent plate as taught by Fan in the system of Tsumura. One of ordinary skill in the art would have been motivated to do this since Fan suggests in column 9, lines 3-32 using such the each of the reflection condition control devices includes a digital micro-actuator provided on the rear side of a transparent plate constituting the reflection plane of the retro-reflector and having a control plane according to an applied signal have advantage of allowing the reflected beams are still parallel to the input beam and the walk off problem is eliminated.

### ***Conclusion***

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Green et al (US Patent No. 6,624,916) discloses signaling system.

Meyzonnette et al (US Patent No. 4,887,310) discloses identification system using a laser retro-reflecting and modulating set.

Kelley (US Patent No. 5,355,241) discloses identification friend or foe discriminator.

Sun et al (US Patent No. 5,819,164) discloses modulated retroreflection system.

Gilbreath (US Patent No. 6,154,299) discloses modulating retroreflector.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hanh Phan whose telephone number is (703)306-5840.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan, can be reached on (703)305-4729. The fax phone number for the organization where this application or proceeding is assigned is (703)872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)305-4700.



Hanh Phan

02/18/2004